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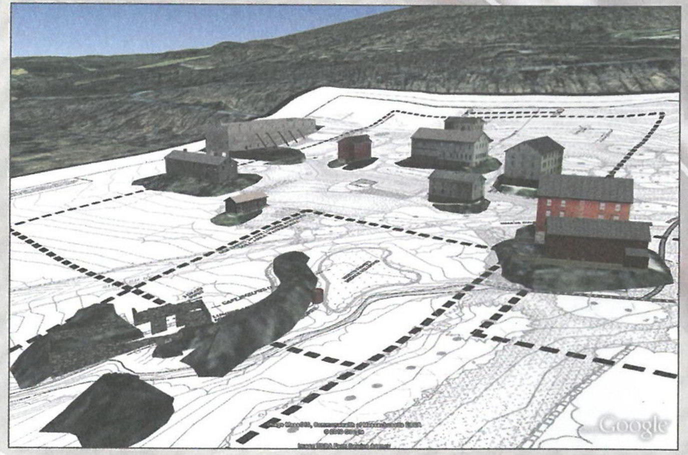
CRGIS

CULTURAL RESOURCES GEOGRAPHIC INFORMATION SYSTEMS



Three-dimensional model of the Mount Lebanon, New York, North Family Shaker village application, based on Historic American Buildings Survey drawings and Historic American Landscapes photographs integrated with a geo-referenced historic map. © 2011 Google

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NATIONAL PARK SERVICE

DOCUMENTING CULTURAL RESOURCES WITH GIS AND GPS TECHNOLOGIES

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What is the Cultural Resource GIS facility?

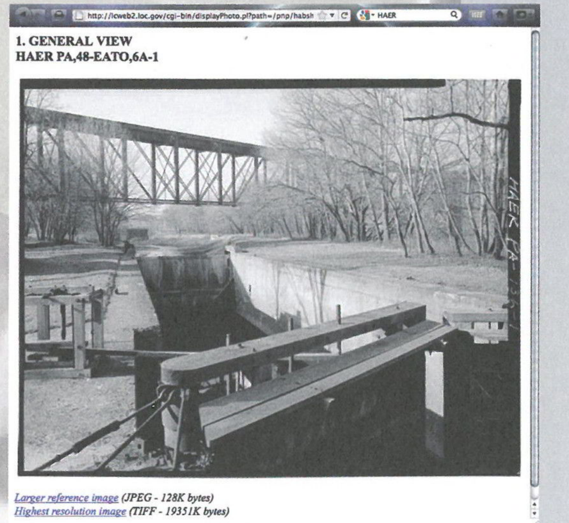
The Cultural Resource Geographic Information Systems facility is the only program within NPS dedicated to developing and fostering the use of Geographic Information Systems (GIS) and Global Positioning System (GPS) technologies in documenting, analyzing, and managing cultural resources. Working closely with parks, partners and other programs, such as the Historic American Buildings Survey (HABS), the Historic American Engineering Record (HAER) and the Historic American Landscapes Survey (HALS), CRGIS records the nation's heritage, using a variety of tools.

- CRGIS staff reflect the varied disciplines in historic preservation including archeology, history, military-history, and architectural history, coupled with GISCI Certified GIS Specialists.
- CRGIS works with many NPS partners including State and Tribal Historic Preservation Offices, local agencies, preservation organizations, universities, other Federal agencies.

What does CRGIS do?

Within historic preservation, accurate locational data remains a critical element in our understanding of cultural landscapes, building traditions, settlement patterns, and past life ways. However, relying completely on traditional survey and documentation methods limits our options. CRGIS explores the use of GIS and GPS to better manage and protect cultural resources. Combining these technologies with traditional documentation methods expands the use of documentation for wider audiences.

- Over the past twenty years CRGIS has mapped and created GIS databases as well as applications for many cultural resources.
- CRGIS has conducted GPS survey or GIS analyses on more than 600 French and Indian War, Revolutionary War, War of 1812, Mexican-American War, and Civil War battlefields, including features from earthworks to associated historic properties.
- CRGIS integrates historic maps with GIS providing important contextual information for many cultural resources, showing the relationships between current and historic landscapes.
- CRGIS works on projects that illustrate how GPS and GIS technologies can better illustrate cultural resources, provide better access to sites, and allow users to engage in dynamic analysis.
- CRGIS projects focus on engineering features, historic buildings, large landscapes and traditional cultural properties as well as how the stories of all of these resources can be enhanced using new technologies.
- CRGIS employs all forms of technologies related to geographically representing cultural resources, helping to provide better 3D visualization tools.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HAER
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1. GENERAL VIEW
HAER PA,48-EATO,6A-1

Larger reference image (JPEG - 128K bytes)
Highest resolution image (TIFF - 19351K bytes)

Historic American Engineering Record image, as displayed through the Library of Congress website, showing a selected outlet lock. Images and documentation are linked to the specific locations in the Delaware and Lehigh National Heritage Corridor GIS application.

BACKGROUND IMAGE

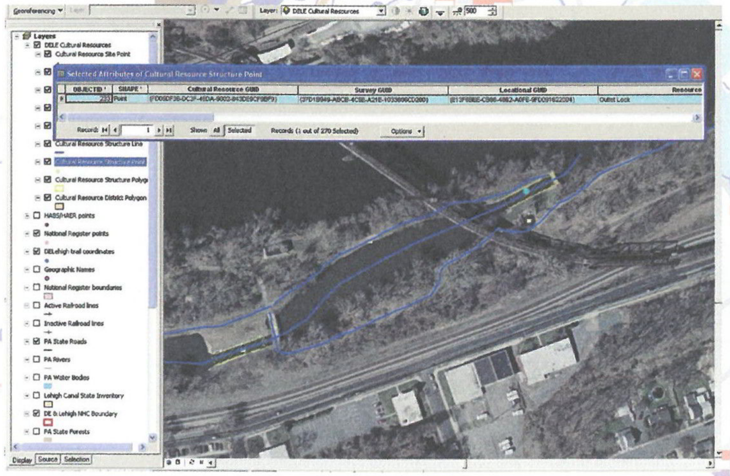
An historic map of the now destroyed village of Florence, New Jersey overlaid with GIS and GPS data collected to document the chronology of cranberry bog development at the Whitesbog historic cranberry bog in Whitesbog, New Jersey.

DOCUMENTING CULTURAL RESOURCES WITH GIS AND GPS TECHNOLOGIES

Documentation, Archival Research, and the Interpretation of Historic Data

The Delaware and Lehigh National Heritage Corridor focuses on the coal industry centered in the region, as well as related manufacturing operations. As part of their mission, the Corridor staff, like any other park unit, state, or Federal agency, needs to create and maintain an inventory of cultural resources and document the remaining features for interpretation.

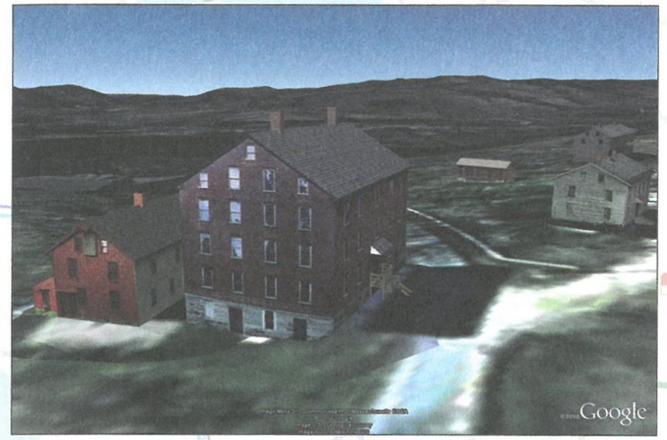
- CRGIS created an inventory of resources using aerial imagery, GPS and GIS data to create a comprehensive tool.
- Existing documentation, such as measured drawings created by the Historic American Engineering Record, were associated with specific locations.
- Documentation, such as National Register of Historic Places nominations, were incorporated into the GIS, allowing Corridor staff to combine traditional documentation with new visualization tools, participate in local planning processes, and protect the resources that remain.



View of the Delaware and Lehigh National Heritage Corridor GIS application, showing the selection of an outlet lock in Easton, Pennsylvania.

BACKGROUND IMAGE

GIS and GPS data used to create an Historic American Landscapes Survey set of drawings delineating the chronology of cranberry bog development at the Whitesbog historic cranberry bog in Whitesbog, New Jersey.



Three-dimensional model of the Mount Lebanon, New York, North Family Shaker village application, based on Historic American Buildings Survey drawings and Historic American Landscapes Survey photographs integrated with GPS and GPS. © 2011 Google

Recording Heritage Places

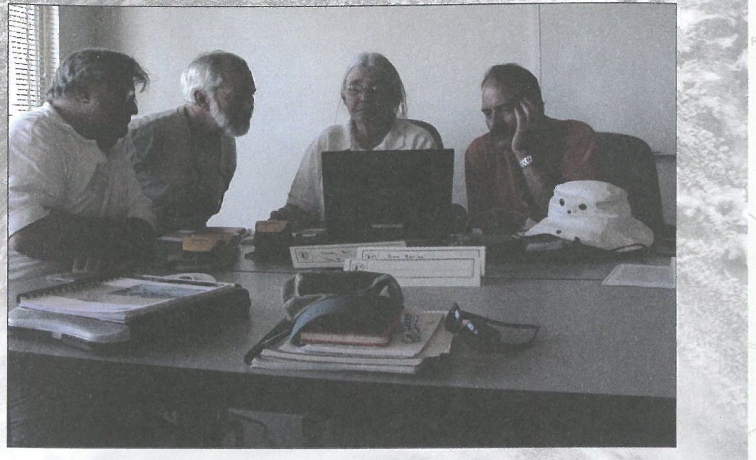
Capturing detailed information that records a physical cultural resource remains the heart of historic preservation. Traditional measured drawings and photographs serve as the tools to accomplish these goals. However, as we continue to broaden our definitions of cultural resources, we must also entertain new ways to record these resource types.

- CRGIS worked with the Historic American Landscapes Survey to document the eighteenth century North Family Shaker village in Mount Lebanon, New York.
- Recording this village and understanding the interconnectedness of the various features tells the story of the community associated with a cultural group that no longer exists.
- Using traditional CAD measured drawings, as well as large format photographs, CRGIS constructed an application modeling the entire village in three dimensions, allowing users to explore the landscape. Additionally, CRGIS overlaid geo-referenced historic maps and current landscape features on the model.
- The tool provided an effective way to record and interpret the site for the public, creating a way to present traditional documentation in a more dynamic environment.

Condition Survey and Assessment and Disaster Response

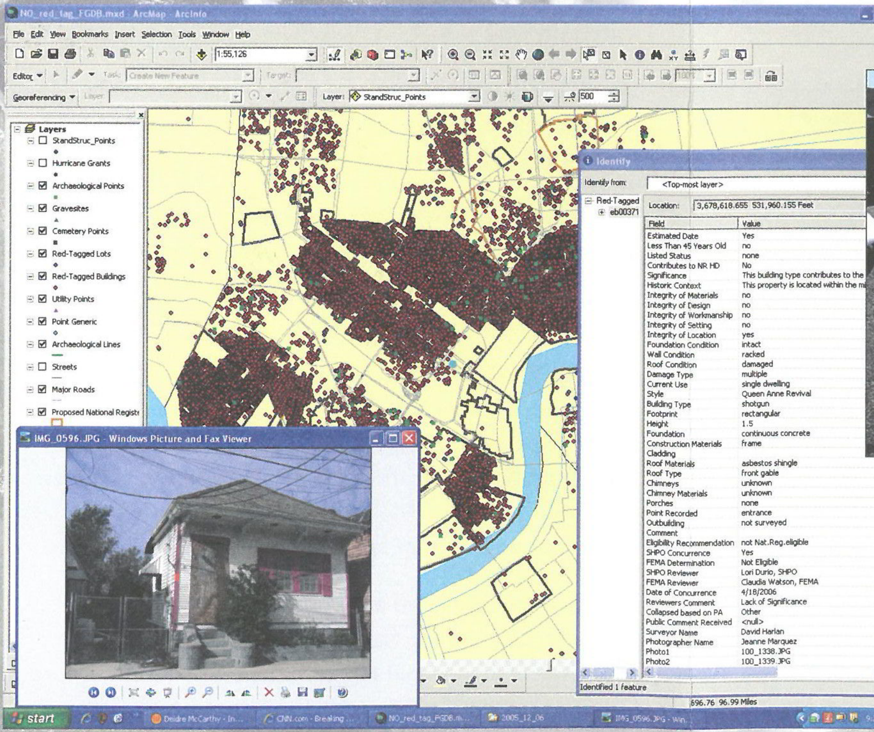
Following a disaster, the ability to access, share, and use cultural resource geographic data is critical to any coherent response strategy, protecting human safety and preserving important resources at the same time. GIS and GPS greatly assist in condition surveys and assessments prior to and during an emergency.

- At the request of FEMA, CRGIS created a strategy to help FEMA meet its National Historic Preservation Act compliance obligations in New Orleans, Louisiana following hurricanes Katrina and Rita.
- Combining GPS and GIS, CRGIS demonstrated how GIS/GPS could be used to identify and evaluate all potentially effected properties and determine the historic significance of each resource through GIS.
- The GPS documentation, derived GIS data and method of review was completely digital, reducing the typical assessment time for each resource from 90 days to 14 days.



CRGIS Facility staff conducting a GPS field training session.

- The use of GIS/GPS to identify, survey, and assess the condition and significance of resources proved extremely efficient, and the data generated serves as a record that can help assess damage should disasters affect the area in the future.
- CRGIS produced a cultural resource disaster response methodology which can be applied to other types and sizes of disasters.



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Location: 3,678,618.655 531,960.155 Feet

Field	Value
Estimated Date	Yes
Less Than 45 Years Old	no
Listed Status	none
Contributes to NR HD	No
Significance	This building type contributes to the
Historic Context	This property is located within the mi
Integrity of Materials	no
Integrity of Design	no
Integrity of Workmanship	no
Integrity of Setting	no
Integrity of Location	yes
Foundation Condition	intact
Wall Condition	racked
Roof Condition	damaged
Damage Type	multiple
Current Use	single dwelling
Style	Queen Anne Revival
Building Type	shotgun
Footprint	rectangular
Height	1.5
Foundation	continuous concrete
Construction Materials	frame
Cladding	
Roof Materials	asbestos shingle
Roof Type	front gable
Chimneys	unknown
Chimney Materials	unknown
Porches	none
Point Recorded	entrance
Outbuilding	not surveyed
Comment	
Eligibility Recommendation	not Nat.Reg.eligible
SHPO Concurrence	Yes
FEMA Determination	Not Eligible
SHPO Reviewer	Lori Durio, SHPO
FEMA Reviewer	Claudia Watson, FEMA
Date of Concurrence	4/18/2006
Reviewers Comment	Lack of Significance
Collapsed based on PA	Other
Public Comment Received	<null>
Surveyor Name	David Harlan
Photographer Name	Jeanne Marquez
Photo1	100_1338.JPG
Photo2	100_1339.JPG

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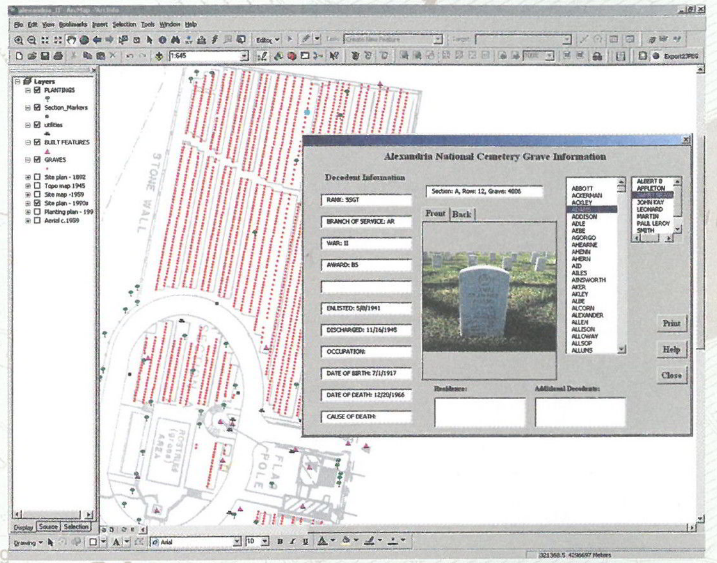
LEFT: View of the New Orleans post-Katrina GIS application, showing the historic architecture review data, including digital photographs, locations of resources collected with GPS, and condition information used to make determinations of eligibility for the National Register of Historic Places related to individual buildings. ABOVE: CRGIS facility staff conducting a GPS field training session.

Information Management for Maintenance and Monitoring of Heritage Places

Documenting resources serves to provide a permanent record of a physical paradigm, in addition to assisting in maintaining a resource and monitoring its status over time.

- CRGIS completed a project at Alexandria National Cemetery in Alexandria, Virginia, creating a GIS tool to locate headstones and monitor the landscape over time.
- Using GPS and geo-referencing historic maps, CRGIS created a GIS model of the cemetery and all of its associated features, integrating the existing cemetery records.



Alexandria National Cemetery Grave Information

Decedent Information

RANK: SSGT

BRANCH OF SERVICE: AR

WAR: II

AWARD: BS

ENLISTED: 5/8/1941

DISCHARGED: 11/16/1945

OCCUPATION:

DATE OF BIRTH: 7/1/1917

DATE OF DEATH: 12/20/1966

CAUSE OF DEATH:

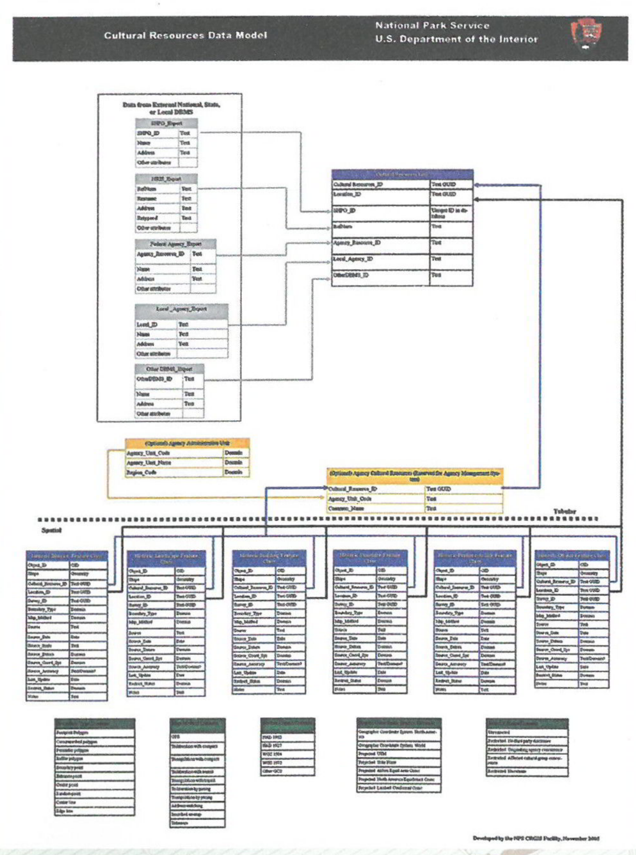
Section: A, Row: 12, Grave: 4006

Residence:

Additional Decedents:

View of the Alexandria National Cemetery GIS application, showing the geo-referenced historic map, locations of headstones and cemetery features collected with GPS, along with photos of headstones and information used to document the soldiers interred.

- The custom application provides better access to data about each person in the cemetery as well as the condition of the various cemetery features, allowing staff to better maintain the resources, explore treatment options, and work to steward the entire site.
- The application also provides visitors with a new and effective way to navigate the cemetery to find individuals or groups.



Cultural Resources Data Model
National Park Service
U.S. Department of the Interior

A schematic model of how the cultural resource spatial data transfer standards are constructed, what information the standards document, and how they can be used to access external databases.

Information Systems and Dissemination

Sharing and disseminating locational information is important to understanding the context within which resources acquire significance. Currently, different agencies maintain their own inventories of resources, often in different formats with different levels of accuracy. Sharing important location information on short notice or to take part in planning processes becomes a challenge.

- Under OMB Circular A-16. the NPS is designated the lead Federal agency for the cultural resource data theme through the Federal Geographic Data Committee.
- As the lead, CRGIS collaborates with Federal, State, and Tribal agencies to develop tools and standards to facilitate data sharing.
- CRGIS created similar National Park Service cultural resource spatial data transfer standards.

GIS and GPS Training

Providing cultural resource oriented GIS/GPS training is a key component of the CRGIS program.

- CRGIS offers introductory and advanced classes of ArcGIS software, providing a GIS foundation using exercises based on typical cultural resource management data.
- CRGIS offers GPS fieldschools tailored to individual group needs using Trimble Navigation equipment and software, with the purpose of giving the student a basis for designing and executing a GPS cultural resource survey, and moving from fieldwork to data processing to integration into a GIS.

CRGIS continues to explore the range and depth of possibilities GIS and GPS technologies offer cultural resource specialists as they work to find new ways to more accurately record, manage, and promote cultural resources. Dynamic presentation through GIS and GPS provides increased visibility of cultural resources in planning processes and improves the stewardship of important resources.

National Park Service
CRGIS
Cultural Resources Geographic Information Services

For more information about the CRGIS program and to contact Cultural Resource GIS Facility, visit our website at **http://www.nps.gov/history/hdp/crgis/index.htm**

BACKGROUND IMAGE

Historic American Landscapes Survey drawing delineating the chronology of cranberry bog development based on GIS and GPS data collected at the Whitesbog historic cranberry bog in Whitesbog, New Jersey.